AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two conduction switches to conduct energy from the source of the input voltage to the output;

at least two inductors in communication with the at least two conduction switches, the at least two inductors wound together on a common core and each inductor having a polarity such that DC currents in the at least two inductors cancel each other, the at least two inductors having a coefficient of coupling approximately equal to one;

at least two freewheeling switches in communication with the at least two conduction switches to provide a path for current during non-conduction periods; and

a drive signal generator to generate drive signals each having a duty cycle of approximately 50%, the drive signals to control the at least two conduction switches,

wherein a combined conduction time of the at least two conduction switches approaches but is less than 100%.

2. (Currently Amended) The coupled inductor regulator of Claim 1, wherein the coefficient of coupling is approximately at least 0.99.

3. (Currently Amended) The coupled inductor regulator of Claim 1, wherein the at least two conduction switches, the at least two inductors, and the at least two freewheeling switches are connected in a buck configuration such that the output voltage is approximately one-half ~~the~~ an amplitude of the input voltage.

4. (Currently Amended) The coupled inductor regulator of Claim 3, wherein the buck configuration includes two buck regulators each operating at approximately 50% duty cycle, each of the two buck regulators including~~,~~:

a conduction switch in communication with a freewheeling switch and an inductor, the conduction switch to communicate current during a conduction period from the source of input voltage through the inductor to the output, the freewheeling switch to provide a conduction path during one of the non-conduction periods for current flowing through the inductor to the output.

5. (Cancelled)

6. (Currently Amended) ~~The coupled inductor regulator of Claim 5~~ A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two conduction switches to conduct energy from the source of input voltage to the output;

at least two inductors in communication with the at least two conduction switches, the at least two inductors wound together on a common core and each inductor of the at least two inductors having a polarity such that DC currents in the at least two inductors cancel each other, the at least two inductors having a coefficient of coupling approximately equal to one;

at least two freewheeling switches in communication with the at least two conduction switches to provide a path for current during non-conduction periods; and

a drive signal generator to generate drive signals each having a duty cycle of approximately 50%, the drive signals to control the at least two conduction switches,

wherein the at least two conduction switches, the at least two inductors, and the at least two freewheeling switches are connected in a boost configuration such that the output

voltage is approximately twice an amplitude of the input voltage, and

wherein the boost configuration includes two boost regulators each operating at approximately 50% duty cycle, each boost regulator including~~,~~:

a conduction switch in communication with a freewheeling switch and an inductor, the conduction switch to communicate current during a conduction period from ~~the~~ a high side of the source of input voltage through the inductor to a low side of the source of input voltage, the freewheeling switch to provide a conduction path during one of the non-conduction periods for current flowing from the high side of the source of input voltage through the inductor to the output.

7. (Currently Amended) ~~The coupled inductor regulator of claim 1~~ A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two conduction switches to conduct energy from the source of input voltage to the output;

at least two inductors in communication with the at least two conduction switches, the at least two inductors wound together on a common core and each inductor of the at least two inductors having a polarity such that DC currents in the at

least two inductors cancel each other, the at least two inductors having a coefficient of coupling approximately equal to one;

at least two freewheeling switches in communication with the at least two conduction switches to provide a path for current during non-conduction periods; and

a drive signal generator to generate drive signals each having a duty cycle of approximately 50%, the drive signals to control the at least two conduction switches,

wherein the at least two conduction switches, the at least two inductors, and the at least two freewheeling switches are connected in a 1:-1 configuration such that the output voltage is approximately a negative of the input voltage

8. (Currently Amended) The coupled inductor regulator of Claim 7, wherein the 1:-1 configuration includes two flyback regulators each operating at approximately 50% duty cycle, each flyback regulator including;

a conduction switch in communication with a freewheeling switch and an inductor, the conduction switch to communicate current during a conduction period from ~~the~~ a high side of the source of input voltage through the inductor to a low side of the source of input voltage, the freewheeling switch to provide a conduction path during one of the non-conduction

periods for current flowing from the output through the inductor to the low side of the source of input voltage.

9. (Currently Amended) The coupled inductor regulator of Claim 1, wherein at least one of the at least two conduction switches includes independently controllable parallel switches.

10. (Currently Amended) The coupled inductor regulator of Claim 1,

wherein the output voltage supplies power to a load~~.~~, and

wherein the coupled inductor regulator further ~~comprising~~comprises a frequency generator to generate a clock signal having an operating frequency, the drive signals synchronous to the clock signal, and the operating frequency controllable in response to changes in the load.

11. (Currently Amended) The coupled inductor regulator of Claim 10, wherein the changes in the load include output current changes and output voltage changes.

12. (Currently Amended) The coupled inductor regulator of Claim 1,

wherein each of the at least two inductors includes a pair of series inductors, each pair of series inductors having a common node between ~~the~~ series inductors~~,~~, and

wherein each of the at least two conduction switches is in communication with the common node of a corresponding pair of series inductors.

13. (Currently Amended) The coupled inductor regulator of Claim 12, wherein the at least two conduction switches, the pair~~s~~ of series inductors, and the at least two freewheeling switches are connected in a buck configuration, the buck configuration including two buck regulators each operating at approximately 50% duty cycle, each of the two buck regulators including~~,~~:

a conduction switch in communication with a freewheeling switch and the pair of series inductors, the conduction switch to communicate current during a conduction period from the source of input voltage through the pair of series inductors to the output, the freewheeling switch to provide a conduction path during one of the non-conduction periods for current flowing through one of the pair of series inductors to the output.

14. (Currently Amended) The coupled inductor regulator of Claim 12, wherein the at least two conduction switches, the at least two inductors, and the at least two freewheeling switches are connected in a boost configuration including two boost regulators each operating at approximately 50% duty cycle, each boost regulator including~~,~~:

a conduction switch in communication with a freewheeling switch and an inductor, the conduction switch to communicate current during a conduction period from ~~the~~ a high side of the source of input voltage through the inductor to a low side of the source of input voltage, the freewheeling switch to provide a conduction path during one of the non-conduction periods for current flowing from the high side of the source of input voltage through the inductor to the output.

15. (Currently Amended) The coupled inductor regulator of Claim 12, wherein the at least two conduction switches, the at least two inductors, and the at least two freewheeling switches are connected in a flyback configuration including two flyback regulators each operating at approximately 50% duty cycle, each flyback regulator including~~,~~:

a conduction switch in communication with a freewheeling switch and an inductor, the conduction switch to communicate current during a conduction period from ~~the~~ a high

side of the source of input voltage through the inductor to a low side of the source of input voltage, the freewheeling switch to provide a conduction path during one of the non-conduction periods for current flowing from the output through the inductor to the low side of the source of input voltage.

16. (Currently Amended) ~~The coupled inductor regulator of Claim 12~~ A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two conduction switches to conduct energy from the source of input voltage to the output;

at least two inductors in communication with the at least two conduction switches, the at least two inductors wound together on a common core and each of the at least two inductors having a polarity such that DC currents in the at least two inductors cancel each other, the at least two inductors having a coefficient of coupling approximately equal to one;

at least two freewheeling switches in communication with the at least two conduction switches to provide a path for current during non-conduction periods; and

a drive signal generator to generate drive signals each having a duty cycle of approximately 50%, the drive signals to control the at least two conduction switches,

wherein each of the at least two inductors includes a pair of series inductors, each pair having a common node between series inductors,

wherein each of the at least two conduction switches is in communication with the common node of a corresponding pair of series inductors, and

wherein each of the at least two inductors has a quantity of turns, and a turns ratio of the turns for each pair of series inductors is selected to set a voltage ratio of the output voltage divided by the input voltage.

17. (Currently Amended) The coupled inductor regulator of Claim 16,

wherein the at least two inductors each have approximately an equal quantity of turns such that the output voltage is approximately equal to one-fourth of the input voltage, and

wherein the at least two conduction switches, the pairs of two series inductors, and the at least two freewheeling switches are connected in a buck configuration, the buck configuration including two buck regulators each operating at approximately 50% duty cycle, each of the two buck regulators including:

a conduction switch in communication with a freewheeling switch and ~~a~~ the pair of series inductors, the conduction switch to communicate current during a conduction period from the source of input voltage through the pair of series inductors to the output, the freewheeling switch to provide a conduction path during one of the non-conduction periods for current flowing through one of the pair of series inductors to the output.

18. (Currently Amended) The coupled inductor regulator of Claim 16,

wherein the pair of series inductors includes a first inductor in communication with one of the at least two conduction switches and a second inductor in communication with the output~~;~~,

wherein the turns ratio of the ~~series inductors~~ first inductor and the second inductor is defined as a quantity of turns of the first inductor divided by a quantity of turns of the second inductor~~;~~, and

wherein the turns ratio of the pair of series inductors is approximately equal to one-half such that the voltage ratio is approximately one-third.

19. (Currently Amended) The coupled inductor regulator of Claim 1, wherein the at least two freewheeling switches include synchronous rectifiers.

20. (Currently Amended) The coupled inductor regulator of Claim 1, wherein the drive signals include multi-level switching to reduce switching losses.

21. (Currently Amended) The coupled inductor regulator of Claim 1, wherein the coupled inductor regulator is included in a power system, the power system including:

a low dropout regulator having a first output, the first output being the input voltage to the coupled inductor regulator; and

a feedback signal connected from the output voltage of the coupled inductor regulator to the low dropout regulator, the low dropout regulator to regulate the first output in response to the feedback signal.

22. (Currently Amended) The coupled inductor regulator of Claim 1, wherein the common core is made from a high permeability material.

23. (Currently Amended) The coupled inductor regulator of Claim 22, wherein the common core is made from a ferrite.

24.-74. (Cancelled)

75. (Currently Amended) A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two means for conduction switching to controllably conduct energy from the source of input voltage to the output;

at least two inductors in communication with the at least two means for conduction switching, the at least two inductors wound together on a common core and each of the at least two inductors having a polarity such that DC currents in the at least two inductors cancel each other, the at least two inductors having a coefficient of coupling approximately equal to one;

at least two means for freewheeling switching in communication with the at least two means for conduction switching ~~means~~ to provide a path for current during non-conduction periods; and

means for generating drive signals, the drive signals each having a duty cycle of approximately 50%, and the drive

signals to control the at least two means for conduction switching ~~means~~,

wherein the at least two means for conduction switching have a combined conduction time that approaches but is less than 100%.

76. (Currently Amended) The coupled inductor regulator of Claim 75, wherein the coefficient of coupling is approximately at least 0.99.

77. (Currently Amended) The coupled inductor regulator of Claim 75, wherein the at least two means for conduction switching ~~means~~, the at least two inductors, and the at least two means for freewheeling switching ~~means~~ are connected in a buck configuration such that the output voltage is approximately one-half ~~the~~ an amplitude of the input voltage.

78. (Currently Amended) The coupled inductor regulator of Claim 77, wherein the buck configuration includes two buck regulators each operating at approximately 50% duty cycle, each of the two buck regulators including~~,~~:

a means for conduction switching in communication with a means for freewheeling switching and an inductor, the means for conduction switching ~~means~~ to communicate current during a

conduction period from the source of input voltage through the inductor to the output, the means for freewheeling switching ~~means~~ to provide a conduction path during one of the non-conduction periods for current flowing through the inductor to the output.

79. (Currently Amended) The coupled inductor regulator of Claim 75, wherein the at least two means for conduction switching, the at least two inductors, and the at least two means for freewheeling switching are connected in a boost configuration such that the output voltage is approximately twice ~~the~~ an amplitude of the input voltage.

80. (Currently Amended) The coupled inductor regulator of Claim 79, wherein the boost configuration includes two boost regulators each operating at approximately 50% duty cycle, each boost regulator including~~,~~:

a means for conduction switching in communication with a means for freewheeling switching and an inductor, the means for conduction switching to communicate current during a conduction period from ~~the~~ a high side of the source of input voltage through the inductor to a low side of the source of input voltage, the means for freewheeling switching to provide a conduction path during one of the non-conduction periods for

current flowing from the high side of the source of input voltage through the inductor to the output.

81. (Currently Amended) ~~The coupled inductor regulator of Claim 75~~ A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two means for conduction switching to controllably conduct energy from the source of input voltage to the output;

at least two inductors in communication with the at least two means for conduction switching, the at least two inductors wound together on a common core and each of the at least two inductors having a polarity such that DC currents in the at least two inductors cancel each other, the at least two inductors having a coefficient of coupling approximately equal to one;

at least two means for freewheeling switching in communication with the at least two means for conduction switching to provide a path for current during non-conduction periods; and

means for generating drive signals, the drive signals each having a duty cycle of approximately 50%, and the drive

signals to control the at least two means for conduction switching,

wherein the at least two means for conduction switching, the at least two inductors, and the at least two means for freewheeling switching are connected in a 1:-1 configuration such that the output voltage is approximately a negative of the input voltage.

82. (Currently Amended) The coupled inductor regulator of Claim 81, wherein the 1:-1 configuration includes two flyback regulators each operating at approximately 50% duty cycle, each flyback regulator including:

a means for conduction switching in communication with a means for freewheeling switching and an inductor, the means for conduction switching to communicate current during a conduction period from ~~the~~ a high side of the source of input voltage through the inductor to a low side of the source of input voltage, the means for freewheeling switching to provide a conduction path during one of the non-conduction periods for current flowing from the output through the inductor to the low side of the source of input voltage.

83. (Currently Amended) The coupled inductor regulator of Claim 75, wherein at least one of the at least two means for

conduction switching includes independently controllable parallel switches.

84. (Currently Amended) The coupled inductor regulator of Claim 75,

wherein the output voltage supplies power to a load~~;~~,

and

wherein the coupled inductor regulator further ~~comprising~~ comprises means for frequency generating to generate a clock signal having an operating frequency, the drive signals synchronous to the clock signal, and the operating frequency controllable in response to changes in the load.

85. (Currently Amended) The coupled inductor regulator of Claim 84, wherein the changes in the load include output current changes and output voltage changes.

86. (Currently Amended) The coupled inductor regulator of Claim 75,

wherein each of the at least two inductors includes a pair of series inductors, each pair having a common node between ~~the~~ series inductors~~;~~, and

wherein each of the at least two means for conduction switching is in communication with the common node of a corresponding pair of series inductors.

87. (Currently Amended) The coupled inductor regulator of Claim 86, wherein the at least two means for conduction switching, the pairs of series inductors, and the at least two means for freewheeling switching are connected in a buck configuration, the buck configuration including two buck regulators each operating at approximately 50% duty cycle, each of the two buck regulators including:

a means for conduction switching in communication with a means for freewheeling switching and the pair of series inductors, the means for conduction switching to communicate current during a conduction period from the source of input voltage through the pair of series inductors to the output, the means for freewheeling switching to provide a conduction path during one of the non-conduction periods for current flowing through one of the pair of series inductors to the output.

88. (Currently Amended) ~~The coupled inductor regulator of Claim 86~~ A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two means for conduction switching to controllably conduct energy from the source of input voltage to the output;

at least two inductors in communication with the at least two means for conduction switching, the at least two inductors wound together on a common core and each of the at least two inductors having a polarity such that DC currents in the at least two inductors cancel each other, the at least two inductors having a coefficient of coupling approximately equal to one;

at least two means for freewheeling switching in communication with the at least two means for conduction switching to provide a path for current during non-conduction periods; and

means for generating drive signals, the drive signals each having a duty cycle of approximately 50%, and the drive signals to control the at least two means for conduction switching,

wherein each of the at least two inductors includes a pair of series inductors, each pair having a common node between series inductors,

wherein each of the at least two means for conduction switching is in communication with the common node of a corresponding pair of series inductors, and

wherein the at least two means for conduction switching, the at least two inductors, and the at least two means for freewheeling switching are connected in a boost configuration including two boost regulators each operating at approximately 50% duty cycle, each boost regulator including~~:~~:

a means for conduction switching in communication with a means for freewheeling switching and an inductor, the means for conduction switching to communicate current during a conduction period from ~~the~~ a high side of the source of input voltage through the inductor to a low side of the source of input voltage, the means for freewheeling switching to provide a conduction path during one of the non-conduction periods for current flowing from the high side of the source of input voltage through the inductor to the output.

89. (Currently Amended) The coupled inductor regulator of Claim 86, wherein the at least two means for conduction switching, the at least two inductors, and the at least two means for freewheeling switching are connected in a flyback configuration including two flyback regulators each operating at approximately 50% duty cycle, each flyback regulator including~~:~~:

a means for conduction switching in communication with a means for freewheeling switching and an inductor, the means for conduction switching to communicate current during a

conduction period from ~~the~~ a high side of the source of input voltage through the inductor to a low side of the source of input voltage, the means for freewheeling switching to provide a conduction path during one of the non-conduction periods for current flowing from the output through the inductor to the low side of the source of input voltage.

90. (Currently Amended) The coupled inductor regulator of Claim 86, wherein each of the at least two inductors has a quantity of turns, and a turns ratio of the turns for each pair of series inductors is selected to set a voltage ratio of the output voltage divided by the input voltage.

91. (Currently Amended) The coupled inductor regulator of Claim 90,

wherein the at least two inductors each have approximately an equal quantity of turns such that the output voltage is approximately equal to one-fourth of the input voltage~~;~~, and

wherein the at least two means for conduction switching, the pair~~s~~ of ~~two~~ series inductors, and the at least two means for freewheeling switching are connected in a buck configuration, the buck configuration including two buck

regulators each operating at approximately 50% duty cycle, each of the two buck regulators including~~:~~

~~a~~ one of the at least two means for conduction switching in communication with ~~a~~ one of the at least two means for freewheeling switching and ~~a~~ the pair of series inductors, the one of the at least two means for conduction switching to communicate current during a conduction period from the source of input voltage through the pair of series inductors to the output, the one of the at least two means for freewheeling switching to provide a conduction path during one of the non-conduction periods for current flowing through one of the pair of series inductors to the output.

92. (Currently Amended) The coupled inductor regulator of Claim 90,

wherein the pair of series inductors include a first inductor in communication with one of the at least two means for conduction switching and a second inductor in communication with the output~~;~~,

wherein the turns ratio of the pair of series inductors is defined as a quantity of turns of the first inductor divided by a quantity of turns of the second inductor~~;~~, and

wherein the turns ratio of the pair of series inductors is approximately equal to one-half such that the voltage ratio is approximately one-third.

93. (Currently Amended) The coupled inductor regulator of Claim 75, wherein the at least two means for freewheeling switching include synchronous rectifiers.

94. (Currently Amended) The coupled inductor regulator of Claim 75, wherein the drive signals include multi-level switching to reduce switching losses.

95. (Currently Amended) The coupled inductor regulator of Claim 75, included in a power system, the power system including:

means for low dropout regulating having a first output, the first output being the input voltage to the coupled inductor regulator; and

a feedback signal connected from the output voltage of the coupled inductor regulator to the means for low dropout regulating, the means for low dropout regulating to regulate the first output in response to the feedback signal.

96. (Currently Amended) The coupled inductor regulator of Claim 75, wherein the common core is made from a high permeability material.

97. (Currently Amended) The coupled inductor regulator of Claim 96, wherein the common core is made from a ferrite.

98.-154. (Cancelled)

155. (Currently Amended) A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two phase signals to control a conduction time;

at least two drivers, responsive to the at least two phase signals, to conduct energy from the source of input voltage; and

a lattice network of coupled inductors in communication between the at least two drivers and the output, the lattice network having N stages wherein N is at least one, pairs of inductors within each of the N stages each having a coefficient of coupling approximately equal to one;

wherein the at least two phase signals each ~~having~~have a duty cycle of approximately 100%/2N~~,~~, and

wherein the output voltage is approximately equal to the input voltage divided by 2N.

156. (Currently Amended) The coupled inductor regulator of Claim 155, wherein the at least two phase signals have a quantity approximately equal to 2N.

157. (Currently Amended) The coupled inductor regulator of Claim 155, wherein the at least two drivers have a quantity approximately equal to 2N.

158. (Currently Amended) The coupled inductor regulator of Claim 155, wherein the pairs of inductors of a stage of the lattice network are in communication with an inductor of a previous stage of the lattice network such that each stage of the lattice network has twice as many inductors as the previous stage.

159. (Currently Amended) The coupled inductor regulator of Claim 155, wherein the pairs of inductors are each wound on corresponding single magnetic core structures.

160. (Currently Amended) The coupled inductor regulator of Claim 155, wherein N is equal to two and the output voltage is approximately equal to one-fourth of the input voltage.

161. (Currently Amended) The coupled inductor regulator of Claim 160, wherein the pairs of inductors are each wound on corresponding single magnetic core structures.

162. (Currently Amended) The coupled inductor regulator of Claim 160, wherein the at least two phase signals are arranged in a timing sequence selected from a group consisting of sequential and alternating.

163. (Currently Amended) The coupled inductor regulator of Claim 162, wherein an intermediate frequency of the lattice network with the alternating timing sequence is greater than the intermediate frequency of the lattice network with the sequential timing sequence.

164. (Currently Amended) A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two phase signals to control a conduction time;

at least two means for conducting, responsive to the at least two phase signals, to conduct energy from the source of input voltage; and

a lattice network of coupled inductors in communication between the at least two means for conducting and the output, the lattice network having N stages wherein N is at least one, pairs of the coupled inductors within each of the stages each having a coefficient of coupling approximately equal to one~~.~~,

wherein the at least two phase signals each ~~having~~have a duty cycle of approximately 100%/2N~~.~~, and

wherein the output voltage is approximately equal to the input voltage divided by 2N.

165. (Currently Amended) The coupled inductor regulator of Claim 164, wherein the at least two phase signals have a quantity approximately equal to 2N.

166. (Currently Amended) The coupled inductor regulator of Claim 164, wherein the at least two means for conducting have a quantity approximately equal to 2N.

167. (Currently Amended) The coupled inductor regulator of Claim 164, wherein the pairs of inductors of a stage of the

lattice network are in communication with an inductor of a previous stage of the lattice network such that each stage of the lattice network has twice as many inductors as the previous stage.

168. (Currently Amended) The coupled inductor regulator of Claim 164, wherein the pairs of inductors are each wound on corresponding single means for magnetic coupling.

169. (Currently Amended) The coupled inductor regulator of Claim 164, wherein N is equal to two and the output voltage is approximately equal to one-fourth of the input voltage.

170. (Currently Amended) The coupled inductor regulator of Claim 169, wherein the pairs of inductors are each wound on corresponding single means for magnetic coupling.

171. (Currently Amended) The coupled inductor regulator of Claim 169, wherein the at least two phase signals are arranged in a timing sequence selected from a group consisting of sequential and alternating.

172. (Currently Amended) The coupled inductor regulator of Claim 171, wherein an intermediate frequency of the lattice

network with the alternating timing sequence is greater than the intermediate frequency of the lattice network with the sequential timing sequence.

173.-187. (Cancelled)

188. (Currently Amended) ~~The coupled inductor regulator of Claim 1~~ A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two conduction switches to conduct energy from the source of input voltage to the output;

at least two inductors in communication with the at least two conduction switches, the at least two inductors wound together on a common core and each of the at least two inductors having a polarity such that DC currents in the at least two inductors cancel each other, the at least two inductors having a coefficient of coupling approximately equal to one;

at least two freewheeling switches in communication with the at least two conduction switches to provide a path for current during non-conduction periods; and

a drive signal generator to generate drive signals each having a duty cycle of approximately 50%, the drive signals to control the at least two conduction switches,

wherein ~~said~~the at least two conduction switches include a first conduction switch that receives a first drive signal and a second conduction switch that receives a second drive signal,

wherein ~~said~~the at least two freewheeling switches include a first freewheeling switch that receives ~~said~~the second drive signal and a second freewheeling switch that receives ~~said~~the first drive signal, and

wherein ~~said~~the first and second drive signals are the same signal with a phase offset that is equal to 360 degrees divided by a number of ~~said~~ the at least two conduction switches.

189.-239. (Cancelled)

240. (Currently Amended) ~~The coupled inductor regulator of Claim 1~~ A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two conduction switches to conduct energy from the source of input voltage to the output;

at least two inductors in communication with the at least two conduction switches, the at least two inductors wound together on a common core and each of the at least two inductors

having a polarity such that DC currents in the at least two inductors cancel each other, the at least two inductors having a coefficient of coupling approximately equal to one;

at least two freewheeling switches in communication with the at least two conduction switches to provide a path for current during non-conduction periods; and

a drive signal generator to generate drive signals each having a duty cycle of approximately 50%, the drive signals to control the at least two conduction switches,

wherein a first conduction time of one of ~~said~~the at least two conduction switches is separated from a second conduction time of another of ~~said~~the at least two conduction switches by non-conduction time, and

wherein a duration of ~~said~~the non-conduction time is substantially less than a duration of both ~~said~~the first conduction time and ~~said~~the second conduction time.

241. (Currently Amended) ~~The coupled inductor regulator of Claim 75~~ A coupled inductor regulator for converting energy from a source of input voltage to an output having an output voltage, comprising:

at least two means for conduction switching to controllably conduct energy from the source of input voltage to the output;

at least two inductors in communication with the at least two means for conduction switching, the at least two inductors wound together on a common core and each of the at least two inductors having a polarity such that DC currents in the at least two inductors cancel each other, the at least two inductors having a coefficient of coupling approximately equal to one;

at least two means for freewheeling switching in communication with the at least two means for conduction switching to provide a path for current during non-conduction periods; and

means for generating drive signals, the drive signals each having a duty cycle of approximately 50%, and the drive signals to control the at least two means for conduction switching,

wherein a first conduction time of one of ~~said~~the at least two means for conduction switching is separated from a second conduction time of another of ~~said~~the at least two means for conduction switching by non-conduction time, and

wherein a duration of ~~said~~the non-conduction time is substantially less than a duration of both ~~said~~the first conduction time and ~~said~~the second conduction time.

242. (Cancelled)

243. (Currently Amended) The coupled inductor regulator of Claim 75,

wherein one of ~~said~~the at least two means for conduction switching receives a first drive signal, another of ~~said~~the at least two means for conduction switching receives a second drive signal, one of ~~said~~the at least two means for freewheeling switching receives ~~said~~the second drive signal, and another of ~~said~~the at least two means for freewheeling switching receives ~~said~~the first drive signal, and

wherein ~~said~~the first and second drive signals are the same signal with a phase offset that is equal to 360 degrees divided by a number of ~~said~~the at least two conduction switches.